Amendments to the Claims

Please amend Claims 1, 2, 6, 14 and 21. The Claim Listing below will replace all prior versions of the claims in the application:

Claim Listing

1. (Currently Amended) A method of displaying an image on a liquid crystal display having a plurality of pixel electrodes comprising:

detecting an ambient light level with a sensor;

selecting a light source based on the ambient light level;

adjusting the brightness of the light source, the brightness being dependent on the detected ambient light level;

writing an image to the display such that the liquid crystal moves to a first position;

flashing [[a]] the light source to illuminate the display;

setting the pixel electrodes to orient the liquid crystal to a second position; and

repeating the writing, flashing, and setting to produce a sequence of images[[;]].

~~detecting the ambient light level with a sensor; and~~

~~adjusting the brightness of the light source for the flashing, the brightness being dependent on the detected ambient light level.~~

2. (Currently Amended) The method of claim 1 wherein the image is a color image and the writing of the image is associated with a color light that is flashed after the writing, the writing, flashing, and setting being repeated for a plurality of colors.

3. (Original) The method of claim 2 wherein the liquid crystal display is an active matrix display having at least 75,000 pixel electrodes and having an active area of less than 160 mm^2.

4. (Original) The method of claim 3 wherein the liquid crystal display is transmissive and the light source is a backlight that illuminates through the display.

5. (Canceled)

6. (Currently Amended) The method of claim 4 further comprising switching the voltage of [[the]] a counterelectrode after each flashing of the light source and prior to the next writing of the image.

7. (Previously Presented) The method of claim 6 wherein the writing of the image to the display by setting the voltage to each pixel electrode is done sequentially starting at one corner of the image and progressing until ending in the opposite corner.

8. (Original) The method of claim 7 wherein the writing of the image is started at an upper corner in a subframe and the image is written to the display starting at a lower corner on the next subframe, and the process of writing the image continues to alternate between starting at an upper corner and a lower corner for subsequent subframes.

9. (Previously Presented) The method of claim 7 further comprising waiting a settling time to allow the liquid crystal to twist between the writing of the last pixel and the flashing of the light source.

10. (Original) The method of claim 9 wherein the liquid crystal is driven black and relaxes clear and the setting the pixel electrodes to a specific value to initialize the display are set to a value to relax the liquid crystal towards clear.

11. (Previously Presented) The method of claim 3 wherein the writing an image to the display is accomplished by writing to one pixel electrode at a time.

12. (Previously Presented) The method of claim 3 wherein the writing an image to the display is accomplished by writing to a plurality of pixel electrodes simultaneously.

13. (Previously Presented) The method of claim 3 further comprising monitoring the power to the microdisplay and initializing a process to discharge a storage capacitor of the pixels to zero when the power drops below a certain level to the display.

14. (Currently Amended) A method of displaying an image on a liquid crystal display having a plurality of pixel electrodes comprising:

detecting the ambient light level with a sensor;

selecting a light source based on the ambient light level;

adjusting the brightness of the light source, the brightness being dependent on the detected ambient light level;

writing an image to the display ~~therein~~ and causing the liquid crystal to move to a specific image position;

flashing [[a]] the light source to illuminate the display;

switching the voltage of [[the]] a counterelectrode;

setting the pixel electrodes to a specific value to cause the liquid crystal to move towards a desired position; and

repeating the writing, flashing, switching, and setting to produce an image[[;]]

~~detecting the ambient light level with a sensor; and~~

~~adjusting the brightness of the light source for the flashing, the brightness being dependent on the detected ambient light level~~.

15. (Original) The method of displaying an image of claim 14 wherein the liquid crystal display is an active matrix display having at least 75,000 pixel electrodes and having an active area of less than 160 mm^2.

16. (Original) The method of claim 15 wherein the light source includes at least one light emitting diode (LED).

17. (Original) The method of claim 16 wherein the light crystal display is transmissive and the light source is a backlight that illuminates through the display.

18. (Original) The method of claim 17 wherein the image is a multi-color image and the writing of the image is associated with a color light source that is flashed after the writing of the image, and the process is repeated for each of the different color light sources.

19. (Canceled)

20. (Previously Presented) The method of claim 16 further comprising monitoring the power to the microdisplay and initializing a process to discharge the storage capacitor of the pixels to zero when the power drops below a certain level to the display.

21. (Currently Amended) An active matrix liquid crystal display comprising:

an active matrix circuit having an array of transistor circuits formed in a first plane, each transistor circuit being connected to a pixel electrode in an array of pixel electrodes;

an integrated circuit display controller connected to the active matrix circuit, the controller including a read memory, a write memory and a timing control circuit, the controller instructing the active matrix circuit to actuate the pixel electrodes to present an image on the display;

a counterelectrode panel extending in a second plane that is parallel to the first plane, such that the counterelectrode panel receives an applied voltage;

a liquid crystal layer interposed in a cavity between the two planes;

a light source that illuminates the image presented on the display;

a sensor that detects the ambient light level; and

a brightness controller connected to the sensor, the brightness controller selecting a light source and adjusting the brightness of the selected light source based on the detected ambient light level.

22. (Original) The active matrix liquid crystal display of clam 21 further comprising circuitry for setting voltage of the pixel electrodes to the voltage of the counterelectrode to initialize the display at each subframe.

23. (Original) The active matrix liquid crystal display of claim 22 further comprising circuitry to heat the liquid crystal display.

24. (Original The active matrix liquid crystal display of claim 23 further comprising a sensor interposed between the substrates to monitor a property of the liquid crystal.

25. (Previously Presented) The active matrix liquid crystal display of claim 24 wherein the writing of the image to the display by setting the voltage to each pixel electrode is done sequentially starting at one corner of the image and progressing until ending in the opposite corner.

B1 cont

26. (Original) The active matrix liquid crystal display of claim 25 wherein the writing of the image is started at an upper corner in a subframe and the image is written to the display starting at a lower corner on the next subframe, and the process of writing the image continues to alternate between starting at an upper corner and a lower corner for subsequent subframes.

27. (Original) The active matrix liquid crystal display of claim 25 wherein the property that is measured is the temperature of the liquid crystal.

28. (Original) The active matrix liquid crystal display of claim 25 wherein the property that is measured is the capacitance of the liquid crystal.

29. (Original) The active matrix liquid crystal display of claim 28 wherein the array of transistor circuits are formed on an oxide layer and the oxide layer is thinned at the pixel electrodes.

30. (Original) The active matrix liquid crystal display of claim 29 wherein the oxide layer is thinned adjacent to the liquid crystal.

31. (Original) The active matrix liquid crystal display of claim 29 wherein the oxide layer is thinned to form a depression to receive the pixel electrode.

32. (Withdrawn) A microdisplay system comprising:

an active matrix liquid crystal display including an array of piexl electrodes;

a display circuit having a pair of memory elements and at least one controller that controls writing and reading from the memory elements such that a first memory element is being written while the data from a second memory element is sent to the display;

a light source that illuminates the array of pixel electrodes; and

a lens that magnifies an image formed on the active matrix liquid crystal display.

33. (Withdrawn) The microdisplay system of claim 32 further comprising a multeplixer for directing the signal and output process for inverting selected video signals.

34. (Withdrawn) The microdisplay system of claim 32 further comprising at least one scaling circuit for interpolating image data from a certain number of pixel data to a preferred number of pixel data for the display.

35. (Withdrawn) The microdisplay system of claim 34 wherein the scaling is of horizontal lines of video data.

36. (Withdrawn) The microdisplay system of claim 34 wherein the scaling if of vertical columns of video data and further comprising a buffer for storing data.

37. (Withdrawn) The microdisplay system of claim 34 further comprising a gamma correction circuit for converting an input signal to an output signal which results in proper intensity on the display.

38. (Withdrawn) The microdisplay system of claim 37 wherein the gamma correction circuit has

39. (Withdrawn) The microdisplay system of claim 37 wherein the gamma correction circuit has a look up table for converting an input signal to an output signal which results in proper intensity on the display

40. (Withdrawn) The microdisplay system of claim 39 further comprising circuitry for setting voltage of the pixel electrodes to the voltage of the counterelectrode to initialize the display at each subframe and a circuit for switching the voltage of the counterelectrode..

41. (Withdrawn) The microdisplay system of claim 39 further comprising reordering the values of the data for increase efficient use of memory.

B1 cont

42. (Withdrawn) The microdisplay system of claim 32 further comprising circuitry for setting voltage of the pixel electrodes to the voltage of the counterelectrode to initialize the display at each subframe.

43. (Withdrawn) The microdisplay system of claim 42 further comprising a circuit for switching the voltage of the counterelectrode.

44. (Withdrawn) The microdisplay system of claim 43 further comprising a gamma correction circuit having a look up table for converting an input signal to an output signal which results in proper intensity on the display.

45. (Withdrawn) The microdisplay system of claim 44 further comprising reordering the values of the data for increase efficient use of memory.

46. (Withdrawn) The microdisplay system of claim 44 further comprising at least one scaling circuit for interpolating image data from a certain number of pixel data to a preferred number of pixel data for the display.

47. (Withdrawn) The microdisplay system of claim 42 further comprising a digital table for converting an input video signal to a corrected output value to achieve proper twist of the liquid crystal to have proper intensity.

48. (Withdrawn) The microdisplay system of claim 42 further comprising a pair of switching circuits for pseudo-random one of a plurality of signals through one of a plurality of amplifiers and to the display to balance the relative strength of the plurality of signals.

49. (Withdrawn) An analog video system comprising:

a restorer that restores a black level of a video signal from a composite signal;

a filter for separating a synchronization signal from the composite signal;

an active matrix liquid crystal display for receiving the video signal including:

an active matrix circuit having an array of transistor circuits formed in a first plane, each transistor circuit being connected to a pixel electrode in an array of pixel electrodes having an area of 200 mm^2 or less;

a counterelectrode panel extending in a second plane that is parallel to the first plane, such that the counterelectrode panel receives an applied voltage; and

a liquid crystal layer interposed in a cavity between the two planes, the cavity having a depth of less than 3 microns; and

a timing control circuitry that controls the display and receiving the synchronization signal; and

a light source that illuminates the array of pixel electrodes.

50. (Withdrawn) The analog video system of claim 49 further comprising a gamma corrector having a pair of diodes selected based on characteristics of the liquid crystal and a stabilization offset ground circuitry having a linear diode to adjust a center point of a gamma correction curve.

51. (Withdrawn) The analog video system of claim 49 wherein the active matrix liquid crystal display further comprises a delay lock loop in a clock signal path, the delay -

locked loop having a voltage-controlled delay element in the clock signal path and a feed back loop with a phase detector and an integrator for controlling the voltage-control delay.

52. (Withdrawn) The analog video system of claim 49 wherein the active matrix liquid crystal display further comprises a phase-locked loop in a clock signal path, the phase-locked loop has a voltage-controlled oscillator for generating an internal clock signal and a feed back loop with a phase detector and an integrator for controlling the phased-locked loop.

53. (Withdrawn) The analog video system of claim 49 further comprising a digital logic circuit for detecting vertical synchronization signals, the digital logic circuit including a counter for receiving a clock signal and synchronization signal and counting clock signal when the synchronization signal is a specific state, a pair of flip flops for sending a signal if the clock sign, a pair of flip flops each being set upon a specific pattern and timing of vertical synchronization signals being detected, and a vertical counter.

54. (Withdrawn) The analog video system of claim 49 further comprising circuitry to switch the voltage of the counterelectrode after each subframe.

55. (Withdrawn) The analog video system of claim 54 further comprising circuitry for setting voltage of the pixel electrodes to the voltage of the counterelectrode to initialize the display.

56. (Withdrawn) The analog video system of claim 55 wherein the circuitry to switch the voltage of the counterelectrode occurs in the subframe between the end of the writing to the pixel electrodes and the beginning of the next subframe.

57. (Withdrawn) A video recording system comprising:

an image sensor for gathering data from an image and generating a composite signal;

a recording device for recording the composite signal;

an active matrix liquid crystal display for receiving a video signal including:

an active matrix circuit having an array of transistor circuits formed in a first plane, each transistor circuit being connected to a pixel electrode in an array of pixel electrodes having an area of 200 mm^2 or less;

a counterelectrode panel extending in a second plane that is parallel to the first plane, such that the counterelectrode panel receives an applied voltage; and

a liquid crystal layer interposed in a cavity between the two planes, the cavity having a depth of less than 3 microns; and

a processor circuit for routing the composite signal between the image sensor, the recording device and the display;

a dc restorer for restoring black level of the video signal from the composite signal;

a filter for separating a synchronization signal from the composite signal;

a timing control circuitry for controlling the display and receiving the synchronization signal; and

a light source that illuminates the array of pixel electrodes.

58. (Withdrawn) The video recording system of claim 57 further comprising circuitry to switch the voltage of the counterelectrode after each subframe.

59. (Withdrawn) The video recording system of claim 58 further comprising a gamma corrector having a pair of diodes selected based on characteristics of the liquid crystal and a stabilization offset ground circuitry having a linear diode to adjust a center point of a gamma correction curve.

60. (Withdrawn) The video recording system of claim 59 wherein the circuitry to switch the voltage of the counterelectrode occurs in the subframe between the end of the writing to the pixel electrodes and the beginning of the next subframe.

61. (Withdrawn) The video recording system of claim 59 wherein the active matrix liquid crystal display further comprises a delay lock loop in a clock signal path, the delay - locked loop having a voltage-controlled delay element in the clock signal path and a feed back loop with a phase detector and an integrator for controlling the voltage-control delay.

62. (Withdrawn) The video recording system of claim 59 wherein the active matrix liquid crystal display further comprises a phase-locked loop in a clock signal path, the phase-locked loop has a voltage-controlled oscillator for generating an internal clock signal and a feed back loop with a phase detector and an integrator for controlling the phased-locked loop.

B1 cnt

63. (Withdrawn) The analog video system of claim 59 further comprising a view finder housing for carrying the microdisplay, the light source, the timing control circuit and a lens for magnifying the image by at least a factor of two.

64. (Withdrawn) The analog video system of claim 63 wherein the view finder housing has a volume of less than 100 cm^3.

65. (Withdrawn) A digital camera comprising:

a charge coupled device (CCD) for recording an image;

an active matrix liquid crystal display including:

an active matrix circuit having an array of transistor circuits formed in a first plane, each transistor circuit being connected to a pixel electrode in an array of pixel electrodes having an area of less than 200 mm^2;

a counterelectrode panel extending in a second plane that is parallel to the first plane, such that the counterelectrode panel receives an applied voltage; and

a liquid crystal layer interposed in a cavity between the two planes, the cavity having a depth of less than 3 microns; and

timing control circuit for controlling the CCD and the active matrix liquid display;

circuitry for setting voltage of the pixel electrodes to the voltage of the counterelectrode to initialize the display;

a memory card for storing image data;

a light source that illuminates the array of pixel electrodes; and

a lens positioned to receive an image formed on the active matrix liquid crystal display and magnifies the image by at least a factor of two.

66. (Withdrawn) The analog video system of claim 65 further comprising circuitry to switch the voltage of the counterelectrode after each subframe.

67. (Withdrawn) The analog video system of claim 66 further comprising a gamma correction circuit for converting an input signal to an output signal which results in proper intensity on the display.

68. (Withdrawn) A portable communication system comprising:

a wireless transciever;

an active matrix liquid crystal display including:

an active matrix circuit having an array of transistor circuits formed in a first plane, each transistor circuit being connected to a pixel electrode in an array of pixel electrodes having an area of 200 mm^2 or less;

a counterelectrode panel extending in a second plane that is parallel to the first plane, such that the counterelectrode panel receives an applied voltage; and

a liquid crystal layer interposed in a cavity between the two planes, the cavity having a depth of less than 3 microns; and

a light source that illuminates the array of pixel electrodes;

a lens positioned to receive an image formed on the active matrix liquid crystal display and magnifies the image by at least a factor two; and

circuitry for setting voltage of the pixel electrodes to the voltage of the counterelectrode to initialize the display.

69. (Withdrawn) The portable communication system of claim 68 further comprising a cellular telephone.

70. (Withdrawn) The portable communication system of claim 89 further comprising circuitry to switch the voltage of the counterelectrode after each subframe and a gamma correction circuit for converting an input signal to an output signal which results in proper intensity on the display.

B1 cont

71. (Withdrawn) A digital printer comprising:

a control circuit for taking an electronic image and manipulating the image;

an active matrix liquid crystal display for receiving the tailored image from the control circuit;

a backlight that illuminates the liquid crystal display.

72. (Withdrawn) The digital printer of claim 71 further comprising a lens for focusing the image of the display on a photographic plane.

73. (Withdrawn) The digital printer of claim 71 wherein the active matrix display is a color sequential display system and the backlight is a three color light emitting diodes (LEDs) backlight.

74. (Withdrawn) The digital printer of claim 73 further comprising a photographic film positioned in the photographic plane.

75. (Withdrawn) The digital printer of Claim 71 wherein the array of pixel electrodes comprises an array of at least 320 x 240 and having an active area of less than 160 mm^2.

76. (Withdrawn) The digital printer of Claim 75 wherein the array of pixel electrodes comprises an array of at least 640 x 480.

77. (Withdrawn) The digital printer of claim 75 further comprising a lens for focusing the image of the display on a photographic plane.

78. (Withdrawn) The digital printer of claim 77 wherein the backlight is a light emitting diode (LED).

79. (Withdrawn) An instant camera comprising

a charge coupled device (CCD) for recording an image;

a control circuit for taking the electronic image from the CCD and manipulating the image;

an active matrix liquid crystal display for receiving the manipulated image;

a light emitting diode (LED) device that illuminates the liquid crystal display;

a photographic plane; and

a lens for focusing the image of the liquid crystal display on the photographic plane.

80. (Withdrawn) The instant camera of claim 79 wherein the array of pixel electrodes comprises an array of at least 320 x 240 and having an active area of less than 160 mm^2.

81. (Withdrawn) The instant camera of claim 80 wherein the array of pixel electrodes comprises an array of at least 640 x 480.

82. (Withdrawn) The instant camera of claim 79 wherein the housing has a volume of less than 1000 cm^3.

83. (Withdrawn) The instant camera of claim 82 wherein the housing has a volume of less than 750 cm^3.

84. (Withdrawn) The instant camera of claim 83 wherein the array of pixel electrodes comprises an array of at least 320 x 240 and having an active area of less than 160 mm^2.

85. (Withdrawn) A method of producing an print comprising the steps of:

providing a digital image in a

splitting the digital image into

driving an active matrix liquid crystal display to

projecting a light through the liquid crystal display to project the image of the liquid crystal display on a photosensitive paper; and

repeating the process for the other colors.

B1 cont

86. (Previously Presented) The method of claim 1 further comprising:

detecting the brightness of the light source with a detector, and generating a brightness signal based on the brightness;

comparing the brightness signal to an intensity signal with a feedback controller; and

producing an output signal for the light source with the feedback controller, the output signal being adjusted by the feedback controller so that the brightness signal matches the intensity signal.

87. (Previously Presented) The method of claim 14 further comprising:

detecting the brightness of the light source with a detector, and generating a brightness signal based on the brightness;

comparing the brightness signal to an intensity signal with a feedback controller; and

producing an output signal for the light source with the feedback controller, the output signal being adjusted by the feedback controller so that the brightness signal matches the intensity signal.

88. (Previously Presented) The active matrix liquid crystal display of claim 21 further comprising a detector that detects the brightness of the light source, and a feedback control circuit that compares the brightness of the light source and the intensity level set by the brightness controller, and adjusts the light source so that the light source brightness measured by the detector matches the intensity level.

89. (Previously Presented) The active matrix liquid crystal display of claim 21 wherein the array of pixel electrodes has an area of 200 mm^2 or less.